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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,328	08/17/2005	Teruo Komori	263370US90PCT	8645

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EXAMINER	
DUONG, THANH P	

ART UNIT	PAPER NUMBER
1797	

NOTIFICATION DATE	DELIVERY MODE
03/24/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/516,328	KOMORI ET AL.	
	Examiner	Art Unit	
	TOM P. DUONG	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 December 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's remarks and amendment filed on December 12, 2009 have been carefully considered. Claims 1-20 are pending in this application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pitcher, Jr. (4,417,908) in view of EP 1184066 (hereinafter EP '066) and Fukutani et al. (4,632,683).

Regarding claims 1, 2, 3 and 13, Pitcher, Jr. discloses a columnar honeycomb structural body (Fig. 17) comprising: a porous ceramic block (Col. 8, lines 39-60) having a large number plurality of through holes (228) extending in parallel with one another in a length direction of the porous ceramic block, the porous ceramic block having a wall portion interposed between the through holes, wherein the through holes have one of ends sealed (Col. 9, lines 5-68) such that an opening area of one end face of the through holes is larger than an opening area of the other end face of the through holes (228, 229), the plurality of through holes includes a plurality of large through holes and a plurality of small through holes, the large through holes have cross-section areas which

are larger than cross-section areas of the small through holes, the large through holes and the small through holes are positioned such that a distance between centers of gravity of the cross-section areas of adjacent ones of the large through holes is set to be equal to a distance between centers of gravity of the cross-section areas of adjacent ones of the small through holes (Fig. 17), the wall portion has a plurality of micro pores having an average pore diameter in a range from 5 to 30 μm (Col. 3, lines 55-62 and Col. 4, lines 29-37).

With respect to the opening area of one end face of the through holes and the opening area of the other end face of the through holes have a ratio in a range between 1.01 to 6. Jr. Pitcher discloses such configuration as shown on Figure 16. Note, Jr. Pitcher further discloses the back pressure of the filter as follows:

> Those familiar with honeycomb filter art will appreciate that the back pressure of a filter of honeycomb structure is determined by several contributing factors including thin wall characteristics (width, open porosity, mean pore size, etc.), inlet and outlet cell characteristics (cell density and sizes, inlet/outlet cell ratios, relative sizes and arrangement, etc.) and particulate characteristics (rate of deposit, effective porosity, etc.) (Col. 5, lines 60-68 and Col. 6, lines 1-18).

Thus, the above contributing factors including the inlet/outlet relative sizes can be optimized, at most thru routine optimization, to achieve a filter with minimum back pressure.

Pitcher, Jr. discloses the pore size can be varied based on user's operating requirements such as filter strength, durability and efficiency; contaminant size and concentration; fluid flow rate, density, viscosity, and etc. (Col. 3, lines 55-64) and Pitcher, Jr. further discloses the use of a mean pore diameter and larger pores (Col. 3, lines 55-62) but does not expressly disclose the micro pores include large micro pores

having a pore diameter two or more times larger than the average pore diameter, and the large micro pores have a capacity of which a rate is set to 30% or less of a capacity of the micro pores in entirety.

However, EP '066 teaches that it is conventional to provide micro pores having a pore diameter two or more times larger (pores diameter of 10 μm or more is 20% less than) than the average pore diameter (3-7 μm). Such configuration provides a honeycomb filters with superior in trapping efficiency for fine solid particulates with minimum pressure loss (sections 0008, 0009 and 0013).

Likewise, Fukutani et al. teaches that the pressure loss and collecting efficiency in the honeycomb filter can be optimized be providing small pores having diameter of 5 to 40 μm and large pores having diameter of 40 to 100 μm. In addition, the number of small pores is 5 to 40 times that of the large pores.

Thus, it would have been obvious in view of EP '066 and Fukutani et al. to one having ordinary skill in the art to modify the device of Pitcher, Jr. with the micro pore diameter ratio as taught by EP '066 and/or Fukutani in order to provide a honeycomb filter with an optimum collecting efficiency and minimum pressure loss, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980) and (*In re Allen* 105 USPQ 233).

Regarding claims 4 and 9, Pitcher, Jr. discloses the wall portion has a porosity in a range from 30 to 70% (Col. 3, lines 55-58).

Regarding claims 5, 10 and 14, Pitcher, Jr. discloses the plurality through holes on a cross-section perpendicular to the length direction has a density in a range from 15.5 to 62.0 pcs/cm2 (Col. 11, lines 26-32).

Regarding claims 6, 11, 15, and 18, Pitcher, Jr. discloses is silent with respect to the use of a silicon carbide.

EP '066 teaches the use of a silicon carbide as the material construction for a honeycomb structure. Such material provides a honeycomb structure with superior in heat resistance (section 0015). Thus, it would have been obvious in view of EP '066 to one having ordinary skill in the art to select an appropriate material, such as silicone carbide in the device of Pitcher, Jr. , since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice, absence showing any unexpected results. *In re Leshin*, 125 USPQ 416.

Regarding claims 7, 12, 16, and 19, Pitcher, Jr. discloses the wall portion has a thickness in a range from 0.1 to 0.5 mm (Col. 11, lines 32-37).

Regarding claims 8, 17, and 20, Pitcher, Jr. discloses the honeycomb structure is used to purify the exhaust gas from a vehicle (Col. 10, lines 16-20).

Response to Arguments

Applicant's arguments filed December 14, 2009 have been fully considered but they are not persuasive.

(1) The new matter rejection is withdrawn; thus, rendering moot.

(2) Applicant urged that "…neither EP '066 nor Pitcher, Jr. teaches or suggest "a porous ceramic block having ... through holes [and] a wall portion interposed between the through holes, wherein the through holes have one of ends sealed such that an opening area of one end face of the through holes is larger than an opening area of the other end face of the through holes, the wall portion has a plurality of micro pores having *an average pore diameter in a range from 5 to 30 μm, the micro pores include large micro pores having a pore diameter two or more times larger than the average pore diameter, and the large micro pores have a capacity of which a rate is set to 30% or less of a capacity of the micro pores in entirety*" as recited in Claim 1 (emphasis added in italic)."

Examiner respectfully disagrees. As described in paragraph 1, Pitcher, Jr. further discloses the use of a mean pore diameter and larger pores (Col. 3, lines 55-62) but is silent with respect to the large pore and small pore ratio. EP '066 teaches that it is conventional to provide micro pores having a pore diameter two or more times larger (pores diameter of 10 μm or more is 20% less than) than the average pore diameter (3-7 μm). Such configuration provides a honeycomb filters with superior in trapping efficiency for fine solid particulates with minimum pressure loss (sections 0008, 0009 and 0013).

Likewise, Fukutani et al. teaches that the pressure loss and collecting efficiency in the honeycomb filter can be optimized be providing small pores having diameter of 5 to 40 μm and large pores having diameter of 40 to 100 μm. In addition, the number of small pores is 5 to 40 times that of the large pores.

Thus, it would have been obvious in view of EP '066 and Fukutani et al. to one having ordinary skill in the art to modify the device of Pitcher, Jr. with the micro pore diameter ratio as taught by EP '066 and/or Fukutani in order to provide a honeycomb filter with an optimum collecting efficiency and minimum pressure loss, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980) and (*In re Allen* 105 USPQ 233).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TOM P. DUONG whose telephone number is (571)272-2794. The examiner can normally be reached on 8:00AM - 4:30PM (IFP).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on (571) 272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tom P. Duong/
Primary Examiner, Art Unit 1797